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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/581,943 | 08/25/2006 | Jacques Duparre | 560/5 | 7394 |

27538 7590 06/24/2009
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| EXAMINER | |
|---|---|
| FLOHRE, JASON A | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2622 | |

| MAIL DATE | DELIVERY MODE |
|---|---|
| 06/24/2009 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/581,943 | DUPARRE ET AL. | |
| | Examiner | Art Unit | |
| | JASON FLOHRE | 2622 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *13 April 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-41* is/are pending in the application.

4a) Of the above claim(s) *3 and 18* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17 and 19-41* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06 June 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 4, 9, 17, and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by Kato (United States Patent 5,682,203), hereinafter referenced as Kato.

Regarding claim 1, Kato discloses an image recognition system comprising regularly disposed optical channels having at least one microlens and at least one detector (photocells 2 and micro-lenses 3 which are regularly disposed in a rectangular array as exhibited in figure 1), which is situated in a focal plane thereof and extracts at least one image spot from a microimage behind the microlens (figure 2 exhibits the image sensor 1 in the focal plane of lens 4 as disclosed at column 5, lines 15-18), optical axes of the individual optical channels having different inclinations in such a manner that they represent a function of distance of the optical channel from a centre of a side of the image recognition system which is orientated towards the image, by means of which a ratio of a size of a field of view to an image field size can be determined specifically, wherein the pitch of the microlenses differs from the pitch of the detectors in order to ensure a different inclination of the optical axes for the individual channels (figure 1 exhibits wherein the pitch of the microlenses varies stepwise as they move away from the centre of the sensor, while the pitch of the photo-cell remains constant,

as disclosed at column 5, lines 6-8. The relation between the pitch of the photo-cells (PV and PH) and the pitch of the micro-lenses (MV and MH) is exhibited in the equations disclosed at column 5 lines 11-14) and wherein at least a part of the microlenses are anamorphic lenses which are different for each individual channel (column 5, lines 48-51 disclose that the curvature and power of the micro-lenses increases stepwise as they move away from the centre of the screen. This means that the lenses are anamorphic in that there is an intentional distortion, as by unequal magnification along perpendicular axes due to the continuous change in pitch of the micro-lenses in the horizontal direction compared to the constant pitch of the micro-lenses in the vertical direction which results in a different number of micro-lenses in the vertical and horizontal directions and therefore a different magnification at the peripheries of the vertical and horizontal axes).

Regarding claim 2, Kato discloses everything claimed as applied above (see claim 1), in addition, Kato discloses wherein each optical channel detects at least one specific solid angle segment of the object space as corresponding image spot so that a totality of the transmitted image spots on the detector allows reconstruction of the object ().

Regarding claim 4, Kato discloses everything claimed as applied above (see claim 1), in addition, Kato discloses wherein the individual mircolenses differ with respect to decentralization relative to the detector, a focal distance, conical and/or aspherical parameters and hence enable different inclinations of the optical axes (figure 1 exhibits wherein the pitch of the microlenses varies stepwise as they move away from

the centre of the sensor, while the pitch of the photo-cell remains constant, as disclosed at column 5, lines 6-8 which allows for different inclinations of the optical axes. The relation between the pitch of the photo-cells (PV and PH) and the pitch of the micro-lenses (MV and MH) is exhibited in the equations disclosed at column 5 lines 11-14).

Regarding claim 9, Kato discloses everything claimed as applied above (see claim 1), in addition, Kato discloses wherein the individual optical channels have at least one of: (i) different pitch differences between mircolens and detector; and (ii) at least one pinhole for correction of distortion (column 5 lines 11-14 disclose two equations which teach that the micro-lenses have a smaller pitch than the photo-detectors. It is also disclosed at column 5, lines 6-8 that the pitch of the micro-lenses varies with the distance from the centre of the substrate).

Regarding claim 17, Kato discloses everything claimed as applied above (see claim 1), in addition, Kato discloses wherein the detectors are present as at least one of: (i) a CCD, (ii) a CMOS photosensor array, and (iii) a photosensor array comprising a polymer (column 4 lines 42-43 disclose that the photocells may be a CCD).

Regarding claim 26, Kato discloses everything claimed as applied above (see claim 1), in addition, Kato discloses wherein a pixel is assigned to each optical channel (figure 3 exhibits where a single photocell 22x and color filter 24x are assigned to single microlens 25x creating a single pixel for each optical channel as disclosed at column 1, lines 42-45 and 52).

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kato in view of Beeson et al. (United States Patent 5,521,725), hereinafter referenced as Beeson.

Regarding claim 5, Kato discloses everything claimed as applied above (see claim 1), however Kato fails to disclose wherein microprisms which enable different inclinations of the optical axes are integrated in the individual microlenses.

In a similar field of endeavor Beeson discloses an illumination system employing an array or microprisms. In addition Beeson discloses microprisms which enable different inclinations of the optical axes are integrated in the individual microlenses (that light emanating from each microprism (28) is directed to a corresponding microlens (80) as disclosed at column 2, lines 53-55 and exhibited in figure 2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kato by specifically providing wherein microprisms which enable different inclinations of the optical axes are integrated in the individual microlenses, as taught by Beeson, for the purpose of creating spatially directed light.

Claims 6, 7 and 20- 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kato in view of Applicant's Admitted Prior Art, hereinafter referenced as AAPA.

Regarding claim 6, Kato discloses everything claimed as applied above (see claim 1), however, Kato fails to disclose wherein the individual microlenses are

disposed on a base which has a convex or concave configuration and hence enable different inclinations of the optical axes.

In a similar field of endeavor AAPA discloses an artificial compound eye using a microlens array and its application to scale-invariant processing. In addition, AAPA discloses wherein the individual microlenses are disposed on a base which has a convex or concave configuration and hence enable different inclinations of the optical axes (figure 1 discloses microlenses in a convex configuration as shown in the article "an artificial compound eye using a microlens array and its application to scale-invariant processing").

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kato by specifically providing wherein the individual microlenses are disposed on a base which has a convex or concave configuration and hence enable different inclinations of the optical axes, as taught by AAPA, for the purpose of creating an artificial eye.

Regarding claim 7, Kato discloses everything claimed as applied above (see claim 1), however, Kato fails to disclose wherein the detectors are disposed on a base which has a convex or concave configuration.

. In addition, AAPA discloses wherein the detectors are disposed on a base which has a convex or concave configuration (figure 1 discloses reception cells in a convex configuration, as shown in the article "an artificial compound eye using a microlens array and its application to scale-invariant processing").

Regarding claim 20, Kato discloses everything claimed as applied above (see claim 1), however, Kato fails to disclose wherein pinhole diaphragms are disposed behind the microlenses and directly in front of the detectors and are positioned such that at least one pinhole diaphragm is assigned to each microlens.

In a similar field of endeavor AAPA discloses an optical sensor array in an artificial compound eye. In addition AAPA discloses disclose wherein pinhole diaphragms are disposed behind the microlenses and directly in front of the detectors and are positioned such that at least one pinhole diaphragm is assigned to each microlens (Section 2 of the article "Optical sensor array in an artificial compound eye" discloses an optical sensor which consists of a microlens, a pinhole, and a photodetector).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kato by specifically providing wherein pinhole diaphragms are disposed behind the microlenses and directly in front of the detectors and are positioned such that at least one pinhole diaphragm is assigned to each microlens, as taught by AAPA, for the purpose of creating an artificial compound eye.

Regarding claim 21 Kato in view of AAPA discloses everything claimed as applied above (see claim 20), however, Kato fails to disclose wherein the ratio of the active surface area of the detector to the active surface area of the microlens is adjustable in order to fix light strength and resolution power through the pinhole diaphragm.

However, AAPA discloses wherein the ratio of the active surface area of the detector to the active surface area of the microlens is adjustable in order to fix light strength and resolution power through the pinhole diaphragm (figure 4a of the article "Optical sensor array in an artificial compound eye" discloses a plurality of pinhole diameters which can be used based on the desired angular sensitivity).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kato in view of AAPA by specifically providing wherein the ratio of the active surface area of the detector to the active surface area of the microlens is adjustable in order to fix light strength and resolution power through the pinhole diaphragm, as taught by AAPA, for the purpose of varying the angular sensitivity while preventing wavelength aberrations from distorting the image.

Regarding claim 22, Kato in view of AAPA discloses everything claimed as applied above (see claim 20), however Kato fails to disclose wherein the pinhole diaphragms have a diameter in the range of about 1 to 10 um.

However, AAPA discloses wherein the pinhole diaphragms have a diameter in the range of about 1 to 10 um (figure 4a of the article "Optical sensor array in an artificial compound eye" discloses pinhole diaphragms in the range of 0.22 to 10 um).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kato in view of AAPA by specifically providing wherein the pinhole diaphragms have a diameter in the range of about 1 to 10 um, as taught by AAPA, for the purpose of varying the angular sensitivity while preventing wavelength aberrations from distorting the image.

Regarding claim 23, Kato in view of AAPA discloses everything claimed as applied above (see claim 20), however Kato fails to disclose wherein the pinhole diaphragm is produced from a metal or polymer coating or combinations thereof.

However, AAPA discloses wherein the pinhole diaphragm is produced from a metal or polymer coating or combinations thereof (section 4.2 of the article "Optical sensor array in an artificial compound eye" discloses that the pinhole array is fabricated using chromium).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kato by specifically providing wherein the pinhole diaphragm is produced from a metal or polymer coating or combinations thereof, as taught by AAPA, for the purpose of creating an artificial compound eye.

Claims 8, 11-13, 19 and 27-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kato in view of Miyatake et al. (United States Patent Application Publication 2006/0072029), hereinafter referenced as Miyatake.

Regarding claim 8 Kato discloses everything claimed as applied above (see claim 1), however, Kato fails to disclose wherein the optical channels are free of off-axis aberrations for different inclinations of the optical axes.

However, in a similar field of endeavor Miyatake discloses an image input device. In addition Miyatake discloses wherein the optical channels are free of off-axis aberrations for different inclinations of the optical axes (figure 1 discloses partition walls, 2, which block each optical channel from light from other optical channels which would act as off axis-aberrations).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kato by specifically providing wherein the optical channels are free of off-axis aberrations for different inclinations of the optical axes, as taught by Miyatake, for the purpose of eliminating stray light from neighboring optical channels thereby producing a more accurate image.

Regarding claim 11, Kato discloses everything claimed as applied above (see claim 1), however, Kato fails to disclose wherein a number of optical channels is in the range of about 10 x 10 to 1000 x 1000.

However, Miyatake discloses wherein a number of optical channels is in the range of about 10 x 10 to 1000 x 1000 (the table of paragraph 41 discloses that the number of microlenses in the array is 10 x 10. Each optical channel contains a single microlens).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kato by specifically providing wherein a number of optical channels is in the range of about 10 x 10 to 1000 x 1000, as taught by Miyatake, for the purpose of creating an image sensor large enough to be used in a digital camera.

Regarding claim 12, Kato discloses everything claimed as applied above (see claim 1), however, Kato fails to disclose wherein a size of the optical channels is in the range of about 10 microns x 10 microns to 1 mm x 1 mm.

However, Miyatake discloses wherein a size of the optical channels is in the range of about 10 microns x 10 microns to 1 mm x 1 mm (the pitch of the microlens is

499 micron x 499 micron. This is the approximate size of the optical channel. The 499 micron x 499 micron size of the optical channels is in the range of about 10 microns x 10 microns to 1 mm x 1 mm as disclosed at the table of paragraph 41).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kato by specifically providing wherein a size of the optical channels is in the range of about 10 micron x 10 micron to 1 mm x 1 mm, as taught by Miyatake, for the purpose of creating a sensor array which can contain a large number of pixels while maintaining a small footprint.

Regarding claim 13 Kato discloses everything claimed as applied above (see claim 1), however Kato fails to disclose wherein the regular arrangement of the optical channels are packed tightly in at least one of: (i) a square, (ii) a hexagon, and (iii) a rotational-symmetrical arrangement.

However, Miyatake discloses wherein the regular arrangement of the optical channels are packed tightly in at least one of: (i) a square, (ii) a hexagon, and (iii) a rotational-symmetrical arrangement (figure 1 exhibits a square configuration of 10 x 10 microlenses as disclosed in the table of paragraph 41).

Regarding claim 15, Kato discloses everything claimed as applied above (see claim 1), however, Kato fails to disclose wherein the optical channels are optically isolated from each other.

However, Miyatake discloses wherein the optical channels are optically isolated from each other (figure 1 discloses partition walls, 2, which block each optical channel from light from other optical channels which would act as off axis-aberrations).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kato by specifically providing wherein the optical channels are optically isolated from each other, as taught by Miyatake, for the purpose of eliminating stray light from neighboring optical channels thereby producing a more accurate image.

Regarding claim 19, Kato discloses everything claimed as applied above (see claim 1), however, Kato fails to disclose wherein the optical channels respectively have a plurality of detectors of one or more different functions.

However, Miyatake discloses wherein the optical channels respectively have a plurality of detectors of one or more different functions (each channel comprises a detecting cell (3a) which has a plurality of regions, each of which detects a different color as disclosed at paragraph 109, lines 1-5 and exhibited in figure 12).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kato by specifically providing wherein the optical channels respectively have a plurality of detectors of one or more different functions, as taught by Miyatake, for the purpose of increasing the resolution of the image without adding more microlenses.

Regarding claim 27, Kato discloses everything claimed as applied above (see claim 1), however, Kato fails to disclose wherein a plurality of pixels is assigned to each optical channel.

However, Miyatake discloses wherein a plurality of pixels is assigned to each optical channel (each channel comprises a detecting cell (3a) which have a plurality of

regions, each of which detects a different color as disclosed at paragraph 109, lines 1-5 and exhibited in figure 12).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kato by specifically providing wherein a plurality of pixels is assigned to each optical channel, as taught by Miyatake, for the purpose of increasing the resolution of the image without adding more microlenses.

Regarding claim 28, Kato in view of Miyatake discloses everything claimed as applied above (see claim 27), however, Kato fails to disclose wherein a plurality of pixels with different properties or groups of pixels of the same properties are present.

However, Miyatake discloses wherein a plurality of pixels with different properties or groups of pixels of the same properties are present (each channel comprises a detecting cell (3a) which have a plurality of regions, each of which detects a different color and each region needs to consist of at least 1 pixel as disclosed at paragraph 109, lines 1-5 and exhibited in figure 12.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kato by specifically providing wherein a plurality of pixels with different properties or groups of pixels of the same properties are present, as taught by Miyatake, for the purpose of capturing a color image with a high resolution.

Regarding claim 29, Kato in view of Miyatake discloses everything claimed as applied above (see claim 27), however, Kato fails to disclose wherein color filters are disposed in front of a plurality of pixels.

However, Miyatake discloses wherein color filters are disposed in front of a plurality of pixels (that each channel comprises a detecting cell (3a) which have a plurality of regions, each of which detects a different color and each region needs to consist of at least 1 pixel and a color filter as disclosed at paragraph 109, lines 1-5 and exhibited in figure 12.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kato by specifically providing wherein color filters are disposed in front of a plurality of pixels, as taught by Miyatake, for the purpose of capturing a color image with a high resolution.

Regarding claim 30, Kato in view of Miyatake discloses everything claimed as applied above (see claim 27), however, Kato fails to disclose wherein a plurality of similar pixels at a greater spacing is disposed in an optical channel in order to increase the light strength without loss of resolution.

However, Official Notice is taken that it is well known in the art to provide wherein a plurality of similar pixels at a greater spacing is disposed in an optical channel in order to increase the light strength without loss of resolution, for the purpose of capturing images in lower light situations.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kato in view of Meyers (United States Patent 6,141,048), hereinafter referenced as Meyers.

Regarding claim 10, Kato discloses everything claimed as applied above (see claim 1), however Kato fails to disclose wherein the image recognition system has a constructional length of less than 1 mm.

However, in a similar field of endeavor Meyers discloses a compact image capture device. In addition Meyers discloses wherein the image recognition system has a constructional length of less than 1 mm (each lenslet has a focal length of 0.5 mm which leads to a constructional length of less than 1 mm as disclosed at column 7, line 51.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Miyatake by specifically providing wherein the image recognition system has a constructional length of less than 1 mm, as taught by Meyers, for the purpose reducing material costs.

Claim 14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kato in view of Takayama (United States Patent Application Publication 2005/0041134).

Regarding claim 14, Kato discloses everything claimed as applied above (see claim 1), however, Kato fails to disclose wherein the positions of the microlenses and of the detectors are precisely defined lithographically.

However, in a similar field of endeavor Takayama discloses a solid-state image pickup device. In addition Takayama discloses wherein the positions of the microlenses and of the detectors are precisely defined lithographically protrusion portions are formed to be integrated with the micro-lens array solidly in one process, as disclosed at paragraph 31, lines 3-5, he further discloses that this process is conducted by a lithography technique as disclosed at paragraph 32, lines 3-4. The protrusions define the position of the micro-lens and the detectors).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kato by specifically providing wherein the positions of the microlenses and of the detectors are precisely defined lithographically, as taught by Takayama, for the purpose of keeping manufacturing costs low.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kato in view of Miyatake further in view of Takayama.

Regarding claim 16, Kato in view of Miyatake discloses everything claimed as applied above (see claim 15), however Kato in view of Miyatake fails to disclose wherein the optical isolation is effected by lithographically produced separating walls.

However, Takayama discloses wherein the optical isolation is effected by lithographically produced separating walls the protrusion portions are formed to be integrated with the micro-lens array solidly in one process, as disclosed at paragraph 31, lines 3-5, he further discloses that this process is conducted by a lithography technique as disclosed at paragraph 32, lines 3-4).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kato in view of Miyatake by specifically providing wherein the optical isolation if effected by lithographically produced separating walls, as taught by Takayama, for the purpose of keeping manufacturing costs low.

Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kato in view of Miyatake further in view Nagaoka et al. (United States Patent Application Publication 2004/0218283), hereinafter referenced as Nagaoka.

Regarding claim 24, Kato in view of Miyatake discloses everything claimed as applied above (see claim 1), however, Kato in view of Miyatake fails to disclose wherein the image recognition system has a liquid lens which is pre-connected between image and microlenses in order to adjust the field of view.

In a similar field of endeavor Nagaoka discloses an image capturing device. In addition, Nagaoka discloses wherein the image recognition system has a liquid lens which is pre-connected between image and microlenses in order to adjust the field of view (optical element (10) which is placed in front of image capturing element (41), as disclosed at paragraph 210, line 3 and exhibited in figure 14. The optical element of the invention is disclosed to comprise of a first liquid member as disclosed at paragraph 7, lines 1-2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kato in view of Miyatake by specifically providing wherein the image recognition system has a liquid lens which is pre-connected between image and microlenses in order to adjust the field of view, as taught by Nagaoka, for the purpose of providing zoom magnification while minimizing the number of mechanical parts.

Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kato in view of Miyatake further in view of Campbell et al. (United States Patent 7,196,728), hereinafter referenced as Campbell.

Regarding claim 25, Kato in view of Miyatake discloses everything claimed as applied above (see claim 1), however, Kato in view of Miyatake fails to disclose wherein light sources are disposed on or between the optical channels.

In a similar field of endeavor Campbell discloses an apparatus for displaying images in combination with taking images. In addition Campbell discloses wherein light sources are disposed on or between the optical channels (camera means (14) distributed throughout the display means (12), as disclosed at column 2, lines 24-25 and exhibited in figure 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kato in view of Miyatake by specifically providing wherein light sources are disposed on or between the optical channels, as taught by Campbell, for the purpose of creating a electronic window in which a person can stand on either side of the apparatus and see what is on the other side.

Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kato in view of Miyatake and further in view of Tangen et al. (United States Patent 6,765,617), hereinafter referenced as Tangen.

Regarding claim 31, Kato in view of Miyatake discloses everything claimed as applied above (see claim 27), in addition Kato in view of Miyatake discloses a plurality of pixels per optical channel is disposed (see claim 27). However Kato in view of Miyatake fails to disclose that the optical axes of at least two optical channels intersect

in one object spot in order to enable a stereoscopic 3D photograph and/or a distance measurement.

In a similar field of endeavor Tangen discloses an optoelectronic camera. In addition Tangen discloses the optical axes of at least two optical channels intersect in one object spot in order to enable a stereoscopic 3D photograph and/or a distance measurement (parallax is present in the camera, which uses microlenses (L) figure 2, as disclosed at column 14 lines 40-43).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kato in view of Miyatake by specifically providing that the optical axes of at least two optical channels intersect in one object spot in order to enable a stereoscopic 3D photograph and/or a distance measurement, as taught by Tangen, for the purpose of measuring the distance of an object.

Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kato in view of Miyatake and further in view of Sasano et al. (United States Patent 5,466,926), hereinafter referenced as Sasano.

Regarding claim 32, Kato in view of Miyatake discloses everything claimed as applied above (see claim 27), however Kato in view of Miyatake fails to disclose wherein dispersive elements for colour photos are disposed in front of or on the microlenses. .

However, in a similar field of endeavor Sasano discloses colored microlens array. In addition Sasano discloses wherein dispersive elements for colour photos are

disposed in front of or on the microlenses (colored microlenses 31, 32, and 33, as disclosed at column 6, line 42 and exhibited in figure 2A).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kato in view of Miyatake by specifically providing wherein dispersive elements for colour photos are disposed in front of or on the microlenses, as taught by Sasano, for the purpose of capturing color images.

Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kato in view of Miyatake and further in view of Crosby (United States Patent Application Publication 2004/0201890), hereinafter referenced as Crosby.

Regarding claim 33, Kato discloses everything claimed as applied above (see claim 27), however Kato in view of Miyatake fails to disclose wherein differently orientated gratings or structured polarization filters are disposed in front of similar pixels of an optical channel in order to adjust the polarization sensitivity.

However, in a similar field of endeavor Crosby discloses a microlens including wire-grid polarizer. In addition Crosby discloses wherein differently orientated gratings or structured polarization filters are disposed in front of similar pixels of an optical channel in order to adjust the polarization sensitivity (wire-grid polarizers (16 and 18) on top of microlens (12), as disclosed at paragraph 13, line 1 and exhibited in figure 2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kato in view of Miyatake by specifically providing wherein differently orientated gratings or structured polarization filters are disposed in

front of similar pixels of an optical channel in order to adjust the polarization sensitivity, as taught by Crosby, for the purpose of maintaining polarization of light.

Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kato in view of Mizuguchi et al. (United States Patent 5,543,942), hereinafter referenced as Mizuguchi.

Regarding claim 34, Kato discloses everything claimed as applied above (see claim 1), however Kato fails to disclose wherein the image recognition system is combined with at least one liquid crystal element.

However, in a similar field of endeavor Mizuguchi discloses an LCD microlens substrate. In addition Mizuguchi discloses wherein the image recognition system is combined with at least one liquid crystal element (liquid crystal layer (6) and lens sections (2), as disclosed at column 6, lines 12 and 23 and exhibited in figure 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kato by specifically providing wherein the image recognition system is combined with at least one liquid crystal element, as taught by Mizuguchi, for the purpose of providing a liquid crystal display element.

Claims 35-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kato in view of Mizuguchi et al. (United States Patent 5,543,942), hereinafter referenced as Mizuguchi.

Regarding claim 35, Kato discloses the image recognition system according to claim 1, however, Kato fails to disclose wherein the image recognition system is an integral component in a flatly constructed small appliance taken from the group

consisting of clocks, notebooks, PDAs or organizers, mobile telephones, spectacles or clothing items.

However, Official Notice is taken that it would be obvious to one of ordinary skill in the art at the time the invention was made to have wherein the image recognition system is an integral component in a flatly constructed small appliance taken from the group consisting of clocks, notebooks, PDAs or organizers, mobile telephones, spectacles or clothing items, for the purpose of using a compact camera which won't take up unnecessary space.

Regarding claims 36-41, Kato discloses the image recognition system according to claim 1, however, Kato fails to disclose wherein the image recognition system operates to monitor security technology, for checking and implementing access or use authorization and to integrate in a chip card, credit card, medical technology, monitor tasks in the interior and exterior of vehicles, intelligent cockpits monitoring in the aircraft industry, iris recognition, fingerprint recognition, object recognition and movement detection, for the purpose of providing any of these variations with a camera that takes up a very small amount of space.

However, Official Notice is taken that it would be obvious to one of ordinary skill in the art at the time the invention was made to have the image recognition system operates to monitor security technology, for checking and implementing access or use authorization and to integrate in a chip card, credit card, medical technology, monitor tasks in the interior and exterior of vehicles, intelligent cockpits monitoring in the aircraft industry, iris recognition, fingerprint recognition, object recognition and movement

detection, for the purpose of providing any of these variations with a camera that takes up a very small amount of space.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JASON FLOHRE whose telephone number is (571)270-7238. The examiner can normally be reached on Monday to Thursday 8:00 AM to 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached on 517-272-7564. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Tuan V Ho/
Primary Examiner, Art Unit 2622

/JAF/